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ABSTRACT

The information and activities presented are designed to help teachers, students, and others better understand: (1) current and projected population patterns throughout the regions of the world; (2) ways in which populations change; (3) consequences of population change for individuals, families, societies, and the environment; and (4) the complexity of developing policies to deal with problems associated with population change. An essay, glossary of terms, and data sheet provide information for answering the questions and doing the activities included. Suggestions for further reading are provided. (Author/DC)

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WORLD POPULATION:

TOWARD THE [illegible] CENTURY

POPULATION REFERENCE BUREAU, INC.

1337 CONNECTICUT AVENUE, N.W.
WASHINGTON, D.C. 20036

SE 035 929

TO THE READER

GOAL

To enable the reader to understand: current and projected population patterns throughout the regions of the world; how populations change; the consequences of population change for individuals, families, societies, and the environment; and the complexity of developing policies to deal with problems associated with population change.

OBJECTIVES

Through reading, written work, small group and class discussion, out-of-class projects, analysis of graphs, charts, photographs, and through other activities, the reader will:

- acquire a demographic understanding and vocabulary which can be demonstrated in written and oral work
- demonstrate an understanding of the components of population change and how these components vary in different areas of the world
- describe the relevance of population growth to various problems
- identify variables associated with high fertility and those associated with reducing fertility
- propose and evaluate population-related policies involved in planning for the future
- appreciate the variety of viewpoints possible in discussion of complex issues such as population planning
- identify benefits, drawbacks, and important issues which may arise as societies attempt to influence population change
- acknowledge the role of values, priorities and "trade offs" in making and assessing political decisions
- express opinions and values about population change, the future as it relates to population change, and proposed population policies.
- acquire skill in using tabular data to describe population-related characteristics of countries
- acquire skill in using graphs, charts and formulas to analyze population phenomena.

CONTENTS

- Reading, "World Population: Toward the Next Century"
- Glossary of Demographic Terms
- 1981 World Population Data Sheet
- Scanning the Data Sheet
- Drawing Conclusions
- Checking the Facts
- Questions for Thought and Discussion
- Values and Opinions
- Activities
- Researching Population Issues
- For Further Reading

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ORDERING INFORMATION

Additional copies of this module are available at the following prices: single copy, $1.00; two or more copies, 75¢ each. The *1981 World Population Data Sheet* is available in wall chart form at the following prices: single copy, $1.00; 2 to 49 copies, 75¢ each; 50 copies or more, 50¢ each. (Orders under $20 must be prepaid and a $1.00 handling charge should be included.) Write: Population Reference Bureau, 1337 Connecticut Avenue, N.W., Washington, D.C. 20036.

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WORLD POPULATION: TOWARD THE NEXT CENTURY

by Elaine M. Murphy

Q. What is the population of the world?

A. In mid-1981 approximately 4.5 billion people inhabited planet Earth. We must say "approximately" because these figures are not precise counts but are the best estimates demographers can make.

The human population is not distributed evenly throughout the world. Some continents have far greater numbers of people than others (Antarctica has almost none!) and the same is true of countries and places within countries.

China at 985 million—their own estimates put the number at one billion—is the most populous country in the world. Other countries in the "Top Ten" of population are India, the USSR, the United States, Indonesia, Brazil, Japan, Bangladesh, Pakistan and Nigeria.

Because six of the Top Ten are in Asia, it is not surprising that Asia is by far the most populous continent (with 2.6 billion out of the total 4.5). It is followed by Africa and Europe, both at 486 million, Latin America at 366 million, the USSR (although technically not a continent) at 268 million and North America (excluding Mexico) at 254 million. Oceania, which includes Australia, New Zealand and five island countries, is the smallest at 23 million.

More and more people are living in cities. In 1950, 29 percent of the world's population lived in urban areas; in 1981 41 percent were urban-dwellers. In the year 2000, for the first time in history, the majority of human beings—51 percent—will live in urban areas.

The cities are getting larger. In 1950, only two cities, the New York-New Jersey agglomeration and London, were over 10 million. In 1980, ten cities were over 10 million, and in the year 2000, if urban growth rates continue, there will be 25 cities over 10 million. Mexico City will be the largest at 31 million and five others will be over 20 million in size.

Q. How fast is the population of the world growing?

A. Currently, world population is growing 1.7 percent a year. This sounds like a low rate, but if it continues it means that today's population will double in size in 41 years (see box). The growth rate of the world peaked at about 2 percent in 1965 and then began a slow decline, initially because of dramatic declines in population growth in the developed world at that time, and later when birth rates in most of the developing world began to fall more rapidly. Current estimates put the growth rate of the world in the year 2000 at 1.5 percent.

Even with reduced growth rates, the large and growing population base on which the rates are calculated means that the absolute numbers added are also large and growing. The United Nations estimates that in 1980 we added 80 million people to the globe; by the year 2000, even at a lower rate of growth, the annual addition will be 90 million.

Q. When will the population of the world stop growing?

A. The United Nations estimates that world population could stop growing—that is, the number of births and deaths would be equal—in the year 2110 at 10.5 billion people. This is the medium variant of three projections and it assumes that the present tempo of population programs and policies will continue its current downward pull on fertility. If fertility decreases at a faster pace, world population could stop growing much sooner—in 2040—at 8 billion. If fertility declines at a slower pace, it will take longer to reach zero population growth—until the year 2130—and we will add far more people. The ultimate population size, in that case, would be 14.2 billion.

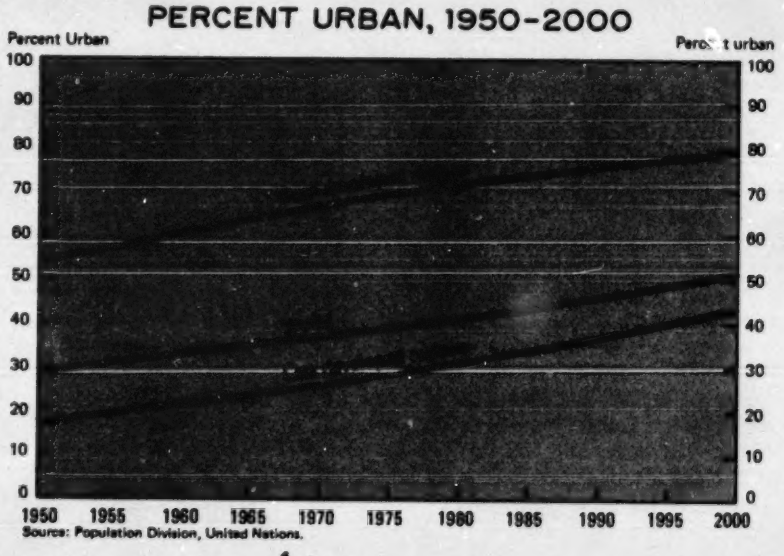
POPULATION DOUBLING TIMES

A quick way to figure out how long it will take a population to double in size is to divide 70 by the growth rate. Thus, a population that is growing 1% per year will double in 70 years (70 ÷ 1 = 70).

Q. Is the term "population explosion" accurate?

A. If one defines "explosion" as "a sudden occurrence," this term ac-

Figure 1



TEN LARGEST CITIES IN THE WORLD IN 1950, 1980, 2000

1950	Population (in millions)	1980	Population (in millions)	2000	Population (in millions)
1. New York-N.E. New Jersey	12.3	1. New York-N.E. New Jersey	20.2	1. Mexico City	31.0
2. London	10.4	2. Tokyo-Yokohama	20.0	2. Sao Paulo	25.8
3. Rhine-Ruhr	6.9	3. Mexico City	15.0	3. Shanghai	23.7
4. Tokyo-Yokohama	6.7	4. Shanghai	14.3	4. Tokyo-Yokohama	23.7
5. Shanghai	5.8	5. Sao Paulo	13.5	5. New York-N.E. New Jersey	22.4
6. Paris	5.5	6. Los Angeles-Long Beach	11.6	6. Peking	20.9
7. Greater Buenos Aires	5.3	7. Peking	11.4	7. Rio de Janeiro	19.0
8. Chicago-N.W. Indiana	4.9	8. Rio de Janeiro	10.7	8. Greater Bombay	16.8
9. Moscow	4.8	9. Greater Buenos Aires	10.1	9. Calcutta	16.4
10. Calcutta	4.6	10. London	10.0	10. Jakarta	15.7

Source: United Nations.

curately describes recent population trends. Most scientists believe that human beings as a distinct species date back three million years or so. During more than 99 percent of this time, humans lived as hunter-gatherers. Because both birth rates and death rates were probably moderately high, population grew very slowly and probably never exceeded 10 million. After agriculture replaced the nomadic patterns of food gathering, about 8,000-6,000 B.C., larger numbers could be supported and population grew more quickly. By the year 1 A.D. there were about 300 million people and by 1650 A.D., 500 million.

But it was in the following centuries as the Industrial Revolution in Western Europe gathered steam (quite literally) that population began to grow rapidly. This growth accelerated after World War II when the population of developing countries increased dramatically. After millions of years of extremely slow growth, the human population indeed grew explosively, doubling over and over (see box); a billion people were added between 1960 and 1975. Before the end of this century, the human population will probably reach 6 billion.

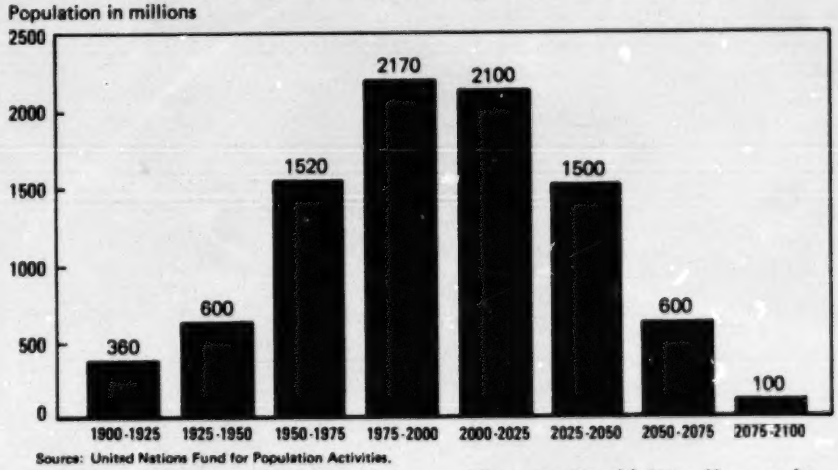
Q. Why did this sudden growth occur? Did people have more babies than ever before?

A. For the world, growth occurs only when there are more births than deaths; for individual countries one must also consider immigration and emigration. Population grew rapidly during the Industrial Revolution, not because people were having larger families, but primarily because the death rate began to fall.

This "mortality revolution" began during the Industrial Revolution in Europe and spread to North America by the mid-1800s. The death rate fell because health improvements were triggered by new technologies and increasing industrialization and urbanization. Of particular importance was the increase in food supplies brought about by new farming and transportation technology. The danger of famine decreased and individual nutrition improved. With better nutrition, there was greater resistance to infectious diseases and greater tolerance of illness.

Figure 2

NET ADDITIONS TO WORLD POPULATION AT 25 YEAR INTERVALS, 1900-2100



Source: United Nations Fund for Population Activities.

Living conditions gradually improved as industrialization raised personal incomes. Better housing reduced diseases associated with crowding, such as tuberculosis. Personal hygiene also improved, including greater use of soap and even a switch from wool to cotton underwear reduced diseases caused by lice.

It was later in the 19th century and early 20th century that public health and medical advances hastened the drop in death rates. Eventually ancient killers such as plague, yellow fever, cholera, typhus, dysentery, diphtheria, tuberculosis and malaria came under control. Infant mortality and child mortality gradually but significantly declined; survival rates improved in other age groups; life expectancy rose. Late in the 19th century, birth rates also began to fall in the developed countries, easing the tremendous population growth that had resulted from the decrease in death rates.

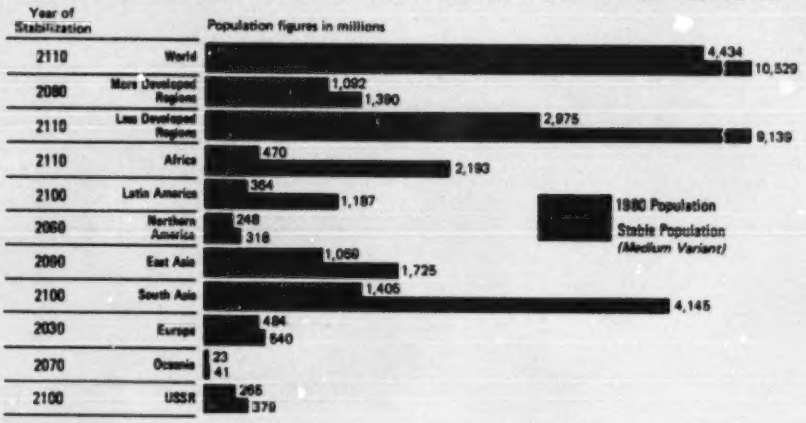
The post-World War II mortality decline in the developing countries followed a different pattern. Western Europe experienced relatively gradual health improvements arising from its own social, technological and economic progress. In the developing world, it seemed to happen almost overnight through the introduction of medical and public health technology—antibiotics, sanitation, immunization, insecticides

(such as DDT which is effective against malaria-bearing mosquitoes), and eradication of smallpox.

These changes did not arise from within the countries benefiting from the improvements, but were "imported" through international foreign aid. Similar kinds of food aid cut the death toll during droughts or other disasters. The mortality rate plunged in a matter of decades rather than in a century or more as had happened in the developed world. It is not surprising that birth rates in the developing countries of Africa, Asia and Latin America have barely had time to adjust and, thus population growth has soared.

Figure 3

ULTIMATE STABLE POPULATION COMPARED WITH 1980 POPULATION FOR DIFFERENT GEOGRAPHICAL REGIONS


Year of Stabilization
Population figures in millions
2110 World 4,434 10,529
2080 More Developed Regions 1,092 1,390
2110 Less Developed Regions 2,975 9,139
2110 Africa 470 2,193
2100 Latin America 364 1,187
2060 Northern America 248 318
2090 East Asia 1,059 1,725
2100 South Asia 1,405 4,145
2030 Europe 484 640
2070 Oceania 23 41
2100 USSR 265 379
1980 Population
Stable Population (Medium Variant)

Source: United Nations Fund for Population Activities.

Q. What is the impact of rapid population growth?

A. This is a complex question. Rapid population growth is associated with air and water pollution, declining supplies of minerals and fossil fuels, deforestation, overfishing, loss of agricultural land, crowding and its effects, poverty, higher mortality, social and political unrest, and inadequate housing, schools and health services. However, it would be a gross oversimplification to say that population growth *causes* these problems.

To analyze pollution and energy consumption, for example, one must consider many factors: the worldwide increase in industrialization; techniques used in extracting minerals and in manufacturing, packaging, transporting and marketing products; inadequate pollution controls and recycling schemes; per capita and societal consumption patterns; prices which encourage or discourage conservation or the search for alternatives; per capita income and preferences for products or lifestyles; *and* population growth.

Similarly, poverty existed long before the recent period of rapid population growth. In trying to understand poverty, one must consider the amount of natural resources—such as rich soil, fresh water, natural harbors, navigable rivers, oil, minerals, and forests—a country possesses or lacks. One must consider the prevalence of disease endemic to an area. One must consider political and social patterns which concentrate power and wealth in the hands of a few, making it difficult for the poor to break out of the cycle of poverty that is often passed on from generation to generation.

But to dismiss the role of population growth in environmental and economic problems is as simplistic as to blame all human miseries on it. For many problems, population growth may not be the cause but it may greatly intensify the problem.

For example, urbanization seems to be an inevitable part of the process of becoming a modern nation.

Components of Population Change

Births – Deaths + Immigrants – Emigrants = Growth (or Decrease)

Natural Increase — Net Migration

Rapid population growth in rural areas of developing countries accelerates migration to the cities as ever-larger numbers of people seek jobs which the rural areas can no longer supply. High fertility in the cities, although usually lower than in rural areas, means built-in natural increase (population growth due to the difference between births and deaths) to which is added high rates of immigration. An already inadequate supply of jobs, housing, clean water, sewage and waste disposal, transportation, schools, health facilities and social services may be strained to the breaking point by rapid population growth, even though it may not have caused those conditions in the first place.

The food problem seems to fall in this category. Hunger has always been a companion to poverty, and periodic famines occurred long before human population began its rapid increase. Even now, most ex-

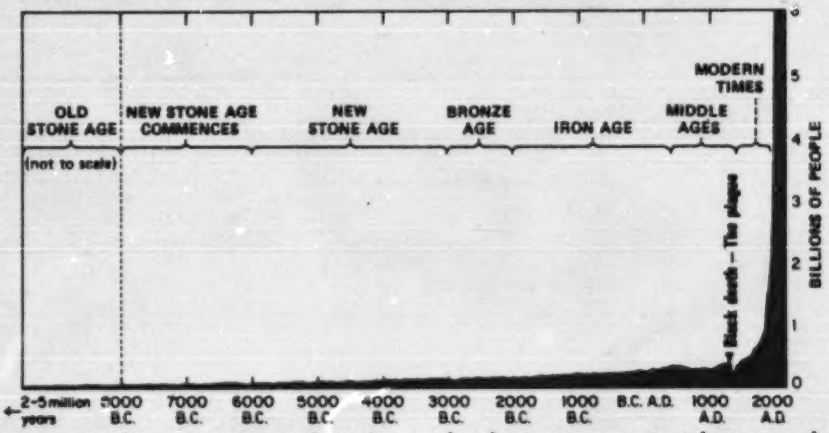
ESTIMATED TIMING OF EACH BILLION OF WORLD POPULATION

	Time taken to reach	Year attained
First billion	2-5 million years	About 1800 A.D.
Second billion	Approx. 130 years	1930
Third billion	30 years	1960
Fourth billion	15 years	1975
Projections:		
Fifth billion	12 years	1987
Sixth billion	11 years	1998

Sources: United Nations and John D. Durand, "Historical Estimates of World Population," Population and Development Review, Vol. 3, No. 3 (September 1977) pp. 253-296.

Figure 4

WORLD POPULATION GROWTH THROUGH HISTORY



perts in this area agree that the world could feed today's population —and a considerably larger number —if modern farming methods were used everywhere, if income were redistributed, if land reform policies were put into effect, if non-nutritious crops were replaced by nutritious crops, if waste and corruption were controlled.

Modern farming methods, to look at just one of the "ifs", depend on mechanization of planting and harvesting, oil, fertilizer, pesticides, special seeds, irrigation, and sound storage, transportation and marketing systems. It takes a great deal of money and a great deal of planning and re-education to change a country's pattern of food production

USDA Photo

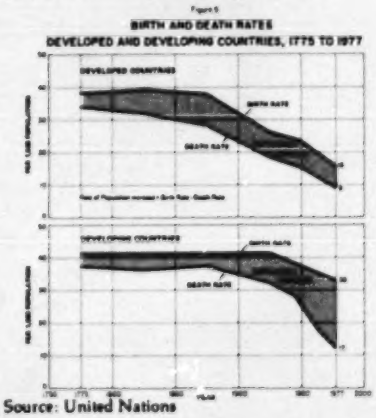
from traditional to modern methods. It also takes time.

In the most rapidly growing countries, population growth can reduce or eliminate food production gains resulting from modernization of farming (see chart). Population growth may not cause hunger but it does increase the numbers of people that must be fed in a world where social justice and reorganization of farming methods do not operate fully.

In some cases, population growth may be quite directly related to a social problem. For example, some developing countries have made enormous progress in increasing the percentage of children enrolled in school. However, because of population growth during the same time period, the *number* of children not enrolled in school also increased. Similar observations could be made about jobs, housing and other human needs: population growth increases the absolute number whose needs must be met.

There is some evidence that high fertility may be an effect of poverty as well as a cause of it. Fertility is highest where there is not much hope of a better life, where people depend on their children for support in old age, where children make real contributions in agriculture, where education, especially for women, is lacking and where the status of women is low. It seems clear that economic, social and environmental conditions interact with population growth in a dynamic and complex way.

Q. Why does it take so long to slow or stop population growth, even after birth rates go down?



Source: United Nations

A. Growth, through natural increase, occurs when births exceed deaths. For example, in the U.S., the birth rate in 1980 was 16 (16 births per 1,000 people) and the death rate was 9, yielding a net increase of 7 persons for every 1,000 persons in the U.S., or approximately 1.6 million additional persons for that year. This gap between births and deaths happened in spite of a very small average family size (technically, the "total fertility rate," an estimate of the number of births to a woman during her lifetime).

There were more births than deaths because there were so many more people in the younger age groups where births occur than in the older age groups where the majority of deaths occur. This disproportionately large number of young adults is, in turn, due to the years of high fertility following World War II known as the "Baby Boom." They are the large number of babies who are now grown up and having babies of their own. Even though these young people are having very small families—less than two children on the average—there are so many of them that births to this group still exceed the number of deaths in all age groups.

The point is that large numbers of young couples each having one or two children can still produce an extremely large total of births. This phenomenon is known as the "momentum of growth." It and immigration are the reasons that the U.S. is growing even though fertility is below replacement level (2.1 children per woman). It is also the reason that developing countries which have reduced their fertility rates will continue to produce far more births than deaths. This will continue until the large number of young adults resulting from previous high fertility have passed out of the childbearing years and the next and smaller generation of young adults reproduce at replacement level fertility.

Q. What policies are most effective in reducing population growth?

A. In the last decade birth rates have dropped by 20 to 60 percent in more than 30 developing countries, an encouraging sign to those governments which have identified rapid population growth as an obstacle to their development goals. Fertility has dropped in settings which vary

quite widely.

Research studies have found that programs which make family planning information and services widely available have the most immediate results and cost less than other programs. In traditional societies, family planning programs are most successful when they are supported by community leaders, those people who have a strong influence on a group's decision-making and on individual attitudes. The importance of this factor is reinforced by a recent re-analysis of the fertility decline in 19th century Europe. The study found that a change in cultural attitudes toward the acceptability of family limitation was as essential as the social and economic improvements that were occurring.

However, to reduce fertility to the level required to bring about slow—or no—growth of population, social and economic improvement is necessary as well. Couples living in extreme poverty have little reason to think that having fewer children would improve their marginal existence. Children may indeed represent their future security. Studies have found that when poor families achieve a certain level of income, there is a drop in fertility, perhaps because families see that their own actions can lead to a better life. People are less likely to think, "I must accept my fate," and planning, including family planning, becomes a new possibility. The availability of family planning services then can help translate new ideas about family size into reality.

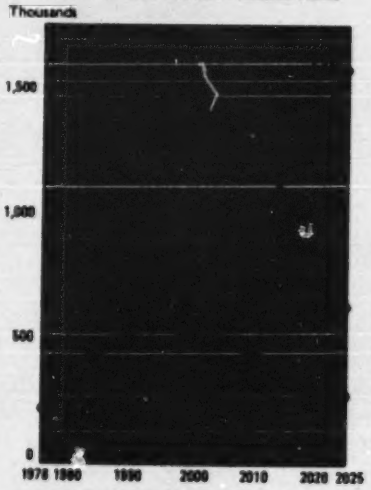
Figure 6

EGYPT

NEW JOBS NEEDED PER YEAR

1976-2025

UNDER THREE FERTILITY ASSUMPTIONS



*A = Continuing a total fertility rate of 5.4 children, B and C = 3-child or 2-child family reached by the year 2000.

Source: Adapted from RAPID, the Futures Group.

Of great importance is the status of women. Studies show that women who have completed primary school have fewer children than those with no education. Having an education usually means that women delay marriage, seek wage-paying jobs, learn about and have more favorable attitudes toward family planning, and have better communication with their husbands when they marry. Educated women have fewer infant deaths; high infant mortality is associated with high fertility.

Similarly, when women have wage-paying jobs, they tend to have fewer children (and conversely, women with few children find it easier to work). Unfortunately, as women in developing countries attempt to move into the paid labor force, they will be competing with men for scarce jobs. By the end of this century, there will be another billion people looking for jobs, a result of the high fertility of preceding years.

Immigration policies are also used to regulate population growth. Some countries openly encourage emigration to relieve crowding and unemployment. Other countries have policies to restrict the number of people who may enter and become citizens. The U.S., for example, recently has accepted about 400,000 immigrants annually, but many more enter illegally. The U.S. also accepts large numbers of refugees.

Q. What is happening in China, India, Mexico and other places associated with rapid population growth? What about developed countries?

A. China, India and Mexico are countries people think of in terms of rapid population growth. However, birth rates in all these places have come down, although reducing population growth is still a major goal in these countries. Africa now has the highest birth rates in the world with Kenya the highest of all. In Kenya, women have an average of eight children.

China's drive to reduce population growth has been vigorous. Its recent policy to encourage a one-child family provides both financial incentives and dis-incentives, such as generous pensions and priority in housing to parents who have only one child. In a matter of a few decades China has already brought its birth rate down to 18 births per 1,000 people through community-based and free provision of all birth control methods, locally planned birth quotas, and attempts to integrate women into all aspects of society. China has set a goal of reach-

ANNUAL RATE OF INCREASE IN FOOD PRODUCTION COMPARED TO POPULATION GROWTH

Region	Food production 1961-1970	Food production 1971-1975	Population 1961-1970	Population 1971-1975	Increase in food production per capita 1961-1970	Increase in food production per capita 1971-1975
	(percent per year)					
Developed Regions						
North America	2.4	1.9	1.3	0.9	1.1	1.1
Western Europe	2.3	1.9	0.8	0.6	1.5	1.3
Oceania	3.4	1.3	1.9	1.7	1.5	0.7
Eastern Europe and USSR	3.2	2.1	1.0	0.9	2.2	1.1
Total	2.7	2.0	1.1	0.9	1.6	1.2
Developing Regions						
Africa	2.9	0.5	2.5	2.7	0.4	-2.1
Latin America	3.0	2.7	2.8	2.7	0.3	-0.1
Far East	2.7	2.8	2.5	2.5	0.2	0.3
Near East	3.3	3.7	2.7	2.8	0.7	0.9
Asian centrally planned economies	2.8	2.4	1.7	1.7	1.1	0.7
Total	2.9	2.5	2.3	2.3	0.6	0.2

Source: Food and Agricultural Organization, *Billions More to Feed* (Rome: FAO, 1976), p. 8.

ing zero population growth by the year 2000. Its current rate of natural increase of 1.2 percent per year is calculated on a base population of almost one billion people. That means almost 12 million more people each year.

India has the world's oldest national family planning program, begun in 1952. Its population of 689 million is growing at over 2.1 percent annually and if it continues, India's population will double in only 33 years. Although its rate of natural increase is considerably less than Kenya's and most other African countries, it represents a disappointment to those who hoped to reduce population growth as an essential step in its plans for social and economic development. There have been modest reductions in family size, but essentially the birth rate remains as high as it was in the previous decade. The low status of women, extreme poverty, logistical problems in delivering family planning services to a nation which is 76 percent rural, and over-zealous attempts to impose population control measures are thought to be reasons the family planning programs have had only limited success.

TOP TEN IN POPULATION, 1981

Country	Population (in millions)
China	985.0
India	688.6
USSR	268.0
United States	229.8
Indonesia	148.8
Brazil	121.4
Japan	117.8
Bangladesh	92.8
Pakistan	88.9
Nigeria	79.7

Source: *1981 World Population Data Sheet*, Population Reference Bureau.

On the other hand, Mexico, Indonesia, Thailand, Hong Kong and Singapore, among others, are experiencing considerable success in reducing their birth rates. Mexico, for example, changed its attitude toward population growth in the early 1970s from a pronatal one (encouraging large families) to one encouraging small families. It has established a large number of family planning clinics, and along with education and socioeconomic development, the result has been an unexpectedly large decline in fertility.

SCHOOL ENROLLMENT OF CHILDREN AGED 6-11 IN DEVELOPING COUNTRIES

Countries	In School	Out of School
	(in millions)	
All Developing Countries		
1970	161.2	118.7
1975	193.4	120.5
1985 (projection)	279.0	130.0
Developing Countries With Yearly Per Capita Incomes Under US$265		
1970	86.0	79.3
1975	103.8	81.6

Source: Unpublished UNESCO data provided by The World Bank, 1978. (Excluding China.)

In the developed countries of Western Europe and North America and in Japan and Australia, fertility is very low. The total fertility rate for the continent of Europe, for example, is below replacement level. Several countries are no longer growing—Austria, West Germany, East Germany, and Luxembourg—and many others are close to a state of population equilibrium. This group must deal with other population problems such as providing social security and other services to the growing proportion of the population that is over 64 years of age, developing an equitable immigration policy, and solving environmental problems associated with per capita consumption of natural resources.

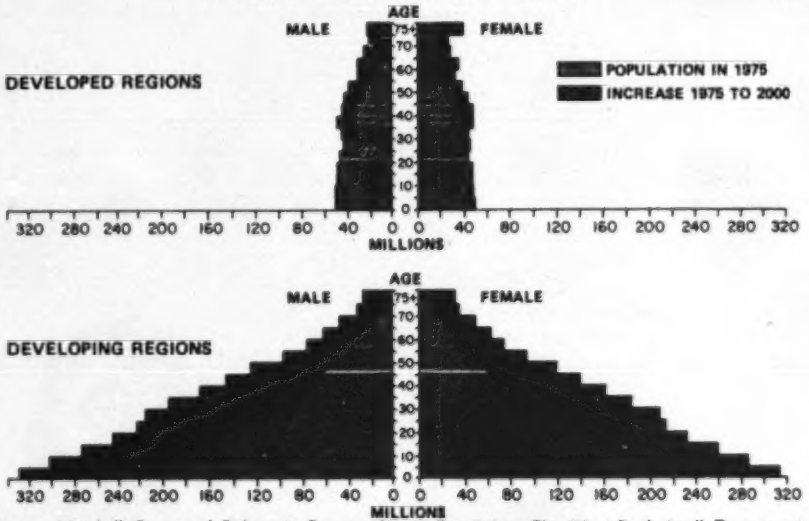
Q. Given this rather complex picture, what conclusion can one draw about world population growth?

A. It seems that those who believe that rapid population growth is a serious threat to the worldwide quality of life can take some encouragement from the fact that developed countries have largely achieved replacement level fertility and that fertility is falling almost everywhere in the developing countries. However, one's optimism must be cautious. A recent report from the United Nations notes:

> Though the 10.5 billion stable population projected by the United Nations medium variant is less alarmist than the figures projected by other studies, it still means that the global population would have grown to be nearly two and a half times larger than the present 4.4 billion. A number of studies have indicated the nature of the impact of population growth on global resources, the global environment and global development.

Figure 7

POPULATION AGE PYRAMIDS



Source: Marshall Green and Robert A. Fearey, "World Population: The Silent Explosion," *Department of State Bulletin* (October 1978), based on U.S. Bureau of the Census data.

Therefore, we cannot afford to be complacent about the nature of these interrelationships, minimize the pressures they generate, or under-estimate the instability they perpetuate.

Even during the present century we might not be able to claim to have provided for the basic needs of nearly half of the world's population, spread not only across the developing countries but also living in some pockets of highly advanced societies. While imbalances created by poverty, malnutrition or ill-health persist, the social tensions arising out of population pressures will permeate every aspect of the quality of life on earth, even impinging on populations outside and setting up a chain reaction.*

It appears that those countries which have made the most significant strides in reducing fertility are the ones which have done so in the context of social and economic development. The success of population programs should reinforce the need for greater assistance in instituting or expanding the most carefully designed and effective programs. Whether or not population growth reaches the high, medium, or low projection made by the U.N. depends in large part on the world's recognition of the problem and its commitment to solving it.

*Rafael M. Salas, *The State of World Population 1981*, United Nations Fund for Population Activities.

GLOSSARY

AGE STRUCTURE. The composition of a population as determined by the number or proportion of males and females in each age category. The age structure of a population is the cumulative result of past trends in fertility, mortality, and migration.

BIRTH RATE (or crude birth rate). The number of births per 1,000 population in a given year. Not to be confused with *growth rate*.

COMPONENTS OF POPULATION CHANGE. Births, deaths, immigration and emigration.

DEATH RATE (or crude death rate). The number of deaths per 1,000 population in a given year.

DEMOGRAPHY (Greek, *demos* [people] + *graphie* [study]). The scientific study of human populations, including their size, composition, distribution, density, growth, and other demographic and socioeconomic characteristics, and the causes and consequences of changes in these factors.

DEVELOPED COUNTRY. One that is relatively industrialized and urbanized, and which has a relatively high per capita income and level of education.

DEVELOPING COUNTRY. One that is less industrialized and relatively rural, and which has a relatively low per capita income and level of education.

DOUBLING TIME. The number of years required for a population of an area to double its present size, given the current rate of population growth.

EMIGRATION. The process of leaving one country to take up permanent residence in another.

FERTILITY. The actual reproductive performance of an individual, a couple, a group, or a population.

GROWTH RATE. The rate at which a population is increasing (or decreasing) in a given year due to natural increase and net migration, expressed as a percentage of the base population.

IMMIGRATION. The process of entering one country from another to take up permanent residence.

LIFE EXPECTANCY. The average number of additional years a person would live if current mortality trends were to continue. Most commonly cited as life expectancy at birth.

MORTALITY. The deaths occurring to a population.

NATURAL INCREASE. The surplus (or deficit) of births over deaths in a population in a given time period.

NET MIGRATION. The net effect of immigration and emigration on an area's population in a given time period, expressed as increase or decrease.

POPULATION MOMENTUM or **MOMENTUM OF GROWTH.** The tendency for population growth to continue beyond the time that replacement level fertility has been achieved because of a relatively high concentration of people in the childbearing ages.

TOTAL FERTILITY RATE (TFR). The average number of children women would have in a given population if they maintained the current level of childbearing throughout their reproductive years.

REPLACEMENT LEVEL FERTILITY. The level of fertility at which couples replace themselves, that is, a total fertility rate of 2.1 children per family (2 children to replace the parents and .1 child to account for deaths). It can be as high as 2.5 in countries with high mortality.

ZERO POPULATION GROWTH (ZPG). A population in equilibrium with a growth rate of zero, achieved when births plus immigration equal deaths plus emigration.

Source: Arthur Haupt and Thomas T. Kane, *Population Handbook* (Population Reference Bureau, Inc., Washington, D.C. 1978).

1981 WORLD POPULATION DATA SHEET

Prepared by Carl Haub

Region or Country[1]	Population Estimate, Mid-1981 (millions)[2]	Crude Birth Rate[3]	Crude Death Rate[3]	Rate of Natural Increase (annual, %)[4]	Number of Years to Double Population (*at current rate*)[5]	Population Projected for 2000 (millions)[6]	Infant Mortality Rate[7]	Total Fertility Rate[8]	Population under Age 15 (%)	Population over Age 64 (%)	Life Expectancy at Birth (years)[9]	Urban Population (%)[10]	Persons per Sq. Kilometer of Arable Land[11]	Per Capita Gross National Product (US$)[12]
NORTHERN AFRICA														
Algeria	19.3	46	14	3.2	22	36.2	127	7.3	48	4	56	61	44	1,580
Egypt	43.5	41	11	3.0	23	65.4	90	5.3	41	3	55	45	1,533	460
Libya	3.1	47	13	3.5	20	5.7	130	7.4	46	2	55	52	33	8,210
Morocco	21.8	43	14	3.0	23	37.7	133	6.9	47	4	55	40	107	740
Sudan	19.6	48	18	3.1	22	32.4	141	6.6	44	3	46	25	62	370
Tunisia	6.6	33	8	2.5	27	9.7	123	5.0	43	4	57	52	87	1,120
WESTERN AFRICA														
Benin	3.8	49	19	3.0	23	6.8	149	6.7	46	2	46	31	372	250
Cape Verde	0.3	29	8	2.1	33	0.4	105	3.0	36	4	57	20	526	270
Gambia	0.6	48	23	2.5	28	1.0	217	6.4	46	2	41	18	105	260
Ghana	12.0	48	17	3.1	22	21.2	115	6.7	46	3	48	31	90	400
Guinea	5.1	46	21	2.5	27	8.2	220	6.2	43	3	44	19	72	270
Guinea-Bissau	0.8	41	23	1.8	39	1.2	211	5.5	38	4	41	24	52	170
Ivory Coast	8.5	50	19	3.1	22	14.4	138	6.7	45	2	46	38	72	1,060
Liberia	1.9	50	17	3.3	21	3.5	148	6.7	41	4	48	33	315	490
Mali	6.8	52	24	2.8	24	11.7	210	6.7	45	3	42	17	21	140
Mauritania	1.7	50	22	2.8	25	2.9	187	6.9	46	3	42	23	4	320
Niger	5.7	51	22	2.9	24	10.0	200	7.1	46	3	42	13	46	270
Nigeria	79.7	50	18	3.2	22	148.9	157	6.9	47	2	48	20	178	670
Senegal	5.8	48	22	2.6	27	9.7	160	6.5	44	3	44	25	72	430
Sierra Leone	3.6	46	19	2.6	26	6.0	136	6.4	43	3	46	25	129	250
Togo	2.6	49	19	3.0	23	4.7	121	6.7	46	3	46	17	162	340
Upper Volta	7.1	48	22	2.6	27	11.8	182	6.5	44	3	42	8	37	180
EASTERN AFRICA														
Burundi	4.2	47	20	2.7	25	7.1	140	6.3	44	3	45	2	245	180
Comoros	0.4	40	18	2.2	31	0.5	148	5.2	43	3	46	12	357	210
Djibouti	0.5	49	22	2.6	26	0.7	—	—	—	—	—	74	185	420
Ethiopia	33.5	50	25	2.5	28	55.3	178	6.7	43	3	39	13	43	130
Kenya	16.5	53	14	3.9	18	32.6	83	8.1	50	2	53	14	273	380
Madagascar	8.8	45	19	2.6	27	14.8	102	6.1	44	3	46	18	24	290
Malawi	6.2	52	20	3.2	22	11.6	142	7.0	48	2	46	10	150	200
Mauritius	1.0	28	7	2.0	34	1.3	34	3.0	36	4	67	44	829	1,040
Mozambique	10.7	45	19	2.6	27	18.0	148	6.1	44	3	46	9	23	250
Reunion	0.5	25	6	1.9	36	0.7	21	2.8	36	4	65	55	912	4,180
Rwanda	5.3	50	19	3.0	23	9.6	127	6.9	47	3	46	4	361	210
Seychelles	0.1	28	7	2.1	34	0.1	27	4.5	41	4	65	37	1,320	1,400
Somalia	3.8	48	20	2.8	25	6.3	177	6.1	45	2	43	30	13	—
Tanzania	19.2	46	16	3.0	23	35.0	125	6.5	46	3	50	12	38	270
Uganda	14.1	45	14	3.0	23	25.4	120	6.1	45	3	52	12	132	290
Zambia	6.0	49	17	3.2	22	10.8	144	6.9	47	3	48	39	17	510
Zimbabwe	7.6	47	14	3.4	21	14.0	129	6.6	49	2	53	20	104	470
MIDDLE AFRICA														
Angola	6.7	48	23	2.4	28	11.0	192	6.4	44	3	41	21	22	440

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Cameroon	8.7	42	19	2.3	30	13.1	157	5.7	42	4	44	35	55	560
Central African Republic	2.4	42	19	2.2	31	3.8	190	5.5	41	4	46	41	40	290
Chad	4.6	44	21	2.3	30	7.4	190	5.9	41	3	44	18	10	110
Congo	1.6	45	19	2.6	27	2.5	180	6.0	43	3	46	39	11	630
Equatorial Guinea	0.3	42	19	2.3	30	0.4	165	5.7	42	4	46	54	76	—
Gabon	0.7	33	22	1.1	62	0.9	178	4.3	34	6	43	36	13	3,280
Sao Tome and Principe	0.1	42	10	3.2	21	0.1	50	—	—	—	—	33	230	450
Zaire	30.1	46	19	2.8	25	48.1	171	6.1	44	3	46	30	97	260
Botswana	0.8	51	17	3.4	21	1.4	97	6.5	50	3	56	30	2	720
Lesotho	1.4	40	16	2.4	29	2.1	114	5.4	41	4	50	5	59	340
Namibia	1.0	44	15	2.8	24	1.7	107	5.9	44	3	51	45	2	1,220
South Africa	29.0	36	12	2.4	29	46.0	97	5.1	42	4	60	50	30	1,720
Swaziland	0.6	47	19	2.8	25	0.9	168	6.4	45	3	46	9	40	650
Canada	24.1	15	7	0.8	89	26.9	12	1.8	25	9	74	76	35	9,650
United States	229.8	16	9	0.7	95	258.9	13	1.8	22	11	74	74	53	10,820
Denmark	5.1	12	11	0.1	770	5.1	9	1.6	20	14	74	84	175	11,900
Finland	4.8	13	9	0.4	169	4.9	8	1.6	21	11	72	62	185	8,260
Iceland	0.2	19	6	1.2	57	0.3	11	2.4	29	10	76	88	10	10,490
Ireland	3.4	20	10	1.0	69	4.1	15	3.4	31	11	73	58	60	4,230
Norway	4.1	13	10	0.3	258	4.1	9	1.8	23	14	75	44	455	10,710
Sweden	8.3	12	11	0.1	1,155	8.0	7	1.7	20	16	75	83	223	11,920
United Kingdom	55.9	13	12	0.1	693	57.1	13	1.9	22	14	73	76	304	6,340
Austria	7.5	11	12	–0.1	—	7.3	15	1.6	21	15	72	54	202	8,620
Belgium	9.9	13	11	0.1	578	9.9	12	1.7	22	14	73	95	682	10,890
France	53.9	14	10	0.4	178	56.4	10	1.9	23	14	73	78	169	9,940
Germany, West	61.3	10	12	–0.2	—	57.5	15	1.4	20	15	72	92	465	11,730
Luxembourg	0.4	11	11	0.0	3,465	0.3	13	1.5	18	13	71	68	—	12,820
Netherlands	14.2	12	8	0.4	154	14.9	8	1.6	23	11	75	88	694	10,240
Switzerland	6.3	12	9	0.3	267	6.2	9	1.5	21	13	75	58	314	14,240
Bulgaria	8.9	16	10	0.5	139	9.6	22	2.1	22	11	72	64	144	3,690
Czechoslovakia	15.4	18	12	0.6	110	17.2	19	2.3	23	12	70	67	222	5,290
Germany, East	16.7	14	14	0.0	6,930	16.6	13	1.9	21	16	72	77	267	6,430
Hungary	10.7	15	13	0.2	315	11.2	24	2.0	21	13	70	54	160	3,850
Poland	36.0	20	9	1.0	67	41.0	22	2.3	24	10	71	57	189	3,830
Romania	22.4	18	10	0.9	79	25.7	30	2.5	25	10	70	48	150	1,900
Albania	2.8	29	7	2.2	32	3.9	—	4.2	38	5	69	37	226	840
Greece	9.6	16	9	0.7	96	10.6	19	2.3	23	13	73	65	105	3,890
Italy	57.2	12	9	0.2	289	57.4	15	1.7	22	13	73	69	326	5,240
Malta	0.3	17	9	0.8	90	0.4	16	2.0	24	11	73	94	2,486	2,640
Portugal	10.0	15	8	0.7	105	11.5	39	2.0	27	10	70	30	244	2,160
Spain	37.8	16	8	0.8	83	43.5	13	2.5	26	11	73	74	120	4,340
Yugoslavia	22.5	17	8	0.9	81	25.7	32	2.2	25	8	69	42	158	2,430

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MIDDLE EAST														
Bahrain	0.4	37	8	2.9	24	0.7	78	7.4	44	3	62	78	6,383	5,460
Cyprus	0.6	21	8	1.2	56	0.7	16	2.2	25	10	73	53	121	2,940
Gaza	0.4	51	14	3.7	19	0.7	118	—	48	5	53	90	—	—
Iraq	13.6	47	13	3.4	20	24.4	92	7.0	47	2	55	72	145	2,410
Israel	3.9	25	7	1.8	39	5.5	16	3.5	33	8	74	89	321	4,170
Jordan	3.3	46	13	3.3	21	5.9	97	7.3	52	3	56	42	223	1,180
Kuwait	1.4	41	5	3.7	19	3.1	39	7.0	46	2	70	88	1,061	17,270
Lebanon	3.2	34	8	2.6	27	4.9	45	4.7	40	5	65	76	904	—
Oman	0.9	49	19	3.0	23	1.7	142	7.2	45	3	47	7	89	2,970
Qatar	0.2	44	14	3.0	23	0.4	138	7.2	45	3	55	86	442	16,590
Saudi Arabia	10.4	49	18	3.0	23	20.3	118	7.2	45	3	48	67	12	7,370
Syria	9.3	42	9	3.4	21	16.9	81	7.2	49	4	62	50	66	1,070
Turkey	46.2	32	10	2.2	32	69.0	125	4.3	39	4	61	47	83	1,330
United Arab Emirates	1.0	37	9	2.8	25	1.9	65	7.2	34	3	60	72	465	15,590
Yemen, North	5.4	48	25	2.3	30	9.8	160	6.8	45	3	40	10	63	420
Yemen, South	2.0	48	21	2.7	26	3.5	170	7.0	46	3	44	37	21	500
SOUTH ASIA														
Afghanistan	16.4	48	21	2.7	26	26.5	185	6.9	45	3	42	15	28	170
Bangladesh	92.8	46	20	2.6	27	155.7	139	6.3	43	3	47	11	954	100
Bhutan	1.3	43	21	2.2	31	2.0	147	6.2	42	3	43	4	481	80
India	688.6	36	15	2.1	33	976.4	134	5.3	41	3	52	22	381	190
Iran	39.8	44	14	3.0	23	66.3	112	6.3	44	4	58	50	66	—
Maldives	0.2	46	14	3.1	22	0.2	120	—	45	2	—	11	3,800	200
Nepal	14.4	44	20	2.4	29	22.1	133	6.4	42	3	43	5	358	130
Pakistan	88.9	44	16	2.8	25	151.5	142	6.3	46	3	52	28	356	270
Sri Lanka	15.3	29	7	2.2	32	20.3	42	3.4	36	4	64	27	592	230
EAST ASIA														
Brunei	0.2	28	4	2.4	29	0.4	20	5.1	38	3	66	76	1,258	10,680
Burma	35.2	39	14	2.4	29	53.7	140	5.5	41	4	53	27	340	160
Democratic Kampuchea	5.5	33	15	1.8	38	8.2	150	4.7	42	3	45	14	152	—
East Timor	0.6	44	21	2.3	30	0.8	175	6.2	42	3	42	11	240	—
Indonesia	148.8	35	15	2.0	35	212.3	91	4.1	44	2	50	20	524	380
Laos	3.6	44	20	2.4	29	5.4	175	6.2	42	3	42	13	217	—
Malaysia	14.3	31	8	2.3	30	20.7	44	4.4	41	4	61	29	220	1,320
Philippines	48.9	34	10	2.4	29	77.6	65	5.0	43	3	61	36	538	600
Singapore	2.4	17	5	1.2	58	3.0	13	1.8	30	5	71	100	30,250	3,820
Thailand	48.6	28	8	2.0	35	75.4	68	3.7	43	3	61	14	273	590
Vietnam	54.9	37	9	2.8	25	77.9	115	5.8	41	4	62	19	512	—
OTHER														
China[13]	985	18	6	1.2	59	1,200	56	2.3	32	6	68	25	309	230
Hong Kong	5.0	17	5	1.2	60	6.4	13	2.3	28	6	73	90	62,675	4,000
Japan	117.8	14	6	0.8	82	126.5	8	1.8	24	8	76	76	2,145	8,800
Korea, North	18.3	33	8	2.4	28	27.4	70	4.5	40	4	62	60	808	1,130
Korea, South	38.9	23	6	1.7	41	51.1	37	3.2	35	4	66	48	1,719	1,500
Macao	0.3	28	8	2.0	35	0.3	—	—	38	5	—	98	—	1,750
Mongolia	1.7	38	9	2.9	24	2.7	70	5.4	44	3	63	50	1	780
Taiwan	18.2	25	5	2.0	35	24.0	25	2.7	35	4	72	77	—	—

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CENTRAL AMERICA														
Belize	0.2	40	12	2.8	25	0.2	—	—	49	4	—	50	133	1,030
Costa Rica	2.3	32	4	2.8	25	3.5	22	3.8	39	4	70	43	113	1,810
El Salvador	4.9	39	7	3.2	22	8.7	53	5.8	45	3	63	41	383	670
Guatemala	7.5	43	12	3.1	22	12.8	69	5.7	45	3	58	36	282	1,020
Honduras	3.9	47	12	3.5	20	7.1	103	7.1	48	3	57	36	104	530
Mexico	69.3	33	8	2.5	28	101.8	70	4.8	42	4	65	67	71	1,590
Nicaragua	2.5	47	12	3.4	20	4.6	122	6.6	48	2	55	53	52	660
Panama	1.9	28	6	2.2	31	2.7	47	4.1	43	4	70	51	109	1,350
CARIBBEAN														
Bahamas	0.3	22	5	1.7	41	0.4	28	3.5	44	4	69	54	1,488	2,780
Barbados	0.3	16	8	0.9	80	0.3	27	2.2	32	10	70	39	692	2,400
Cuba	9.8	15	6	0.9	77	12.3	19	1.9	32	7	72	65	185	1,410
Dominica	0.1	21	5	1.6	43	0.1	20	—	—	—	58	27	416	410
Dominican Republic	5.6	37	9	2.8	25	8.5	96	5.4	45	3	60	51	205	990
Grenada	0.1	24	7	1.8	39	0.1	15	—	—	—	63	15	700	630
Guadeloupe	0.3	17	6	1.1	65	0.4	35	3.2	32	6	69	44	435	3,260
Haiti	6.0	42	16	2.6	26	9.9	130	5.3	41	4	51	25	425	260
Jamaica	2.2	27	6	2.1	33	2.8	16	3.7	43	6	70	50	463	1,240
Martinique	0.3	16	7	0.9	80	0.3	15	3.0	33	6	69	66	592	4,680
Netherlands Antilles	0.3	28	7	2.2	32	0.4	25	3.1	38	6	62	90	3,162	3,540
Puerto Rico	3.2	22	6	1.6	44	4.1	18	2.7	34	6	74	70	652	2,970
St. Lucia	0.1	32	7	2.4	29	0.1	33	—	50	5	67	17	610	780
St. Vincent and the Grenadines	0.1	35	7	2.8	25	0.1	38	—	—	—	67	—	626	490
Trinidad and Tobago	1.2	26	6	2.0	36	1.4	24	2.6	33	5	69	49	702	3,390
SOUTH AMERICA														
Bolivia	5.5	44	19	2.5	28	8.9	168	6.8	42	4	51	33	18	550
Brazil	121.4	32	8	2.4	29	198.5	84	4.4	41	3	64	61	58	1,690
Colombia	27.8	29	8	2.1	33	42.8	77	3.9	41	3	62	60	120	1,010
Ecuador	8.2	42	10	3.1	22	14.5	70	6.3	45	4	60	43	159	1,050
Guyana	0.8	28	7	2.1	33	1.2	46	3.9	44	4	69	30	61	570
Paraguay	3.3	34	7	2.6	26	5.5	58	5.8	44	4	64	40	20	1,060
Peru	18.1	39	12	2.7	26	29.3	92	5.3	42	4	56	67	59	730
Suriname	0.4	30	7	2.3	30	0.8	30	—	51	4	67	44	753	2,360
Venezuela	15.5	36	6	3.0	23	25.9	45	4.9	42	3	66	75	70	3,130
TEMPERATE SOUTH AMERICA														
Argentina	28.2	25	9	1.6	43	33.8	41	2.9	28	8	69	82	16	2,280
Chile	11.2	22	7	1.5	47	14.7	38	3.0	34	5	67	81	63	1,690
Uruguay	2.9	20	10	1.0	67	3.5	48	2.7	27	10	71	84	19	2,090
OCEANIA														
Australia	14.8	16	7	0.9	81	17.9	12	2.0	2[illegible]	9	73	86	3	9,100
Fiji	0.6	28	4	2.4	29	0.8	41	4.0	41	2	71	37	216	1,690
French Polynesia	0.2	34	7	2.7	26	0.2	—	—	46	2	—	39	158	6,350
New Zealand	3.1	17	8	0.9	80	3.8	14	2.2	29	9	73	85	22	5,940
Papua-New Guinea	3.3	44	16	2.8	25	5.1	128	6.0	42	3	50	13	700	650
Samoa, Western	0.2	37	7	3.0	23	0.2	40	5.8	50	3	65	21	131	—
Solomon Islands	0.2	44	9	3.5	20	0.4	78	6.2	48	3	57	9	255	—

UNICEF Photo By Alastair Matheson

The infant mortality rate is one of the many demographic, health and social variables on the World Population Data Sheet.

Notes on the 1981 World Population Data Sheet

General Notes

World Population Data Sheets of various years **should not be used as a time series.** Because every attempt is made to use the most recent and most accurate information, data sources vary and changes in numbers and rates from year to year may reflect improved source material, revised data, or a later base year for computation, rather than yearly changes.

Figures for the regions and the world: Population totals (columns 1 and 6) take into account small areas not listed on the *Data Sheet*. These totals may also not equal the sums of their parts because of independent rounding. All other regional and world figures are weighted averages for countries for which data are available.

Sources of data: Unless otherwise cited, the basic data used in the preparation of this *Data Sheet* were reported in the following United Nations (UN) publications: *Demographic Yearbook, 1978; Population and Vital Statistics Report, Data Available as of 1 January 1981*, Statistical Papers, Series A, Vol. XXXIII, No. 1; *World Population Trends and Prospects by Country, 1950-2000: Summary Report of the 1978 Assessment*, ST/ESA/SER.R/33, 1979; and *Urban, Rural and City Population, 1950-2000 As Assessed in 1978*, ESA/P/WP.66, 1980. Other sources were: *World Population, 1975, Recent Demographic Estimates for the Countries and Regions of the World*, U.S. Bureau of the Census; *Population Projections, 1980-2000 and Long-Term (Stationary Population)*, K. C. Zachariah and My Thi Vu, July 1980, and *World Development Report, 1980*, the World Bank; Country Reports of the World Fertility Survey; *1979 Production Yearbook*, Vol. 33, Food and Agriculture Organization of the United Nations (FAO), 1980; official country publications; and special studies.

Footnotes

[1]The *Data Sheet* lists all geopolitical entities with a population larger than 150,000 (200,000 in previous editions) and all members of the United Nations regardless of population size. Classification of "more developed" and "less developed" regions follows the most recent practice of the UN. The "more developed" regions comprise all of Europe, North America (Bermuda, Canada, Greenland, St. Pierre and Miquelon, and the United States), Australia, New Zealand, Japan, and the USSR. "Less developed" comprise all other regions and/or countries.

[2]Based on a population total from a very recent census or on the most recent official country or UN estimate; for almost all countries the estimate was for 1979 or 1980. Each estimate was updated by the Population Reference Bureau to mid-1981 by applying the same rate of growth as indicated by population change during part or all of the period since 1975.

[3]Annual number of births or deaths per 1,000 population. For the more developed countries with complete or nearly complete registration of births and deaths, nearly all the rates shown pertain to 1978 or 1979. For most less developed countries with incomplete registration, the rates refer to the 1975-80 period. These rates were used in the medium variant estimates and projections as assessed by the UN in 1978 (UN, *World Population Trends and Prospects . . .*). These figures should be considered as rough approximations only. Some estimates were obtained from published reports of the U.S. Bureau of the Census, the World Bank, the World Fertility Survey, government statistical offices, and special studies.

[4]Birth rate minus the death rate. Since the rates were based on unrounded birth and death rates, some rates do not exactly equal the difference between the birth and death rates shown because of rounding.

[5]Based on the current *unrounded* rate of natural increase and assuming no change in the rate.

[6]For most countries, projected by the Population Reference Bureau by applying the growth rate implied by the UN medium variant projections to the country's estimated mid-1981 population. For some of the more developed countries whose total fertility rates (see footnote 8) have been below the replacement level for much of the past decade, the projections were made by assuming that the most recently reported fertility level would remain constant until 2000; migration was assumed to be zero except for the United States, where the assumption of 500,000 annual net immigration was used.

[7]Annual number of deaths to infants under one year of age per 1,000 live births in a given year. For countries with complete or nearly complete registration of births and deaths, nearly all rates pertain to 1978 or 1979. For many less developed countries with incomplete registration, rates are the most recent estimates available, in some cases dating to the 1960s.

[8]The total fertility rate (TFR) indicates the average number of children that would be born to each woman in a population if each were to live through her childbearing lifetime (usually considered ages 15-49) bearing children at the same rate as women of those ages actually did in a given year. A TFR of 2.1 to 2.5, depending upon mortality conditions, indicates "replacement level" fertility—the level at which a country's population would eventually stop growing (or declining), leaving migration out of account. Most TFRs shown here refer to the 1975-1980 period for less developed countries and are from the UN, *World Population Trends and Prospects . . .*, or survey estimates such as those of the World Fertility Survey. For more developed countries, rates are the latest officially reported as shown in the sources noted above or from Alain Monnier, *L'Europe et les pays developpes d'Outre-mer. Donnees statistiques.*, Population, 35:4-5, Institut national d'études démographiques, Paris, 1980 and refer to 1979, in most cases.

[9]Average number of years a newborn child could be expected to live if current mortality conditions were to continue throughout his or her lifetime. For the more developed countries with reliable mortality data, nearly all estimates shown pertain to part or all of the 1975-79 period. For most of the less developed countries with unreliable mortality data, estimates refer to some part of the period since 1970 and were prepared by one of the following organizations: the UN Population Division; the Population Division of the U.S. Bureau of the Census; or the World Bank's Population and Human Resources Division.

[10]Percentage of total population living in areas termed urban by that country.

[11]Estimates of "arable" or "agricultural" land refer to 1978 and are from FAO, *1979 Production Yearbook*. As defined here, it comprises (1) "arable land and land under permanent crops" (double-cropped areas counted once), which refers to temporary meadows, market or kitchen gardens, land temporarily lying fallow or idle, land under crops which do not need to be replanted such as cocoa and rubber, and land under shrubs, fruit trees, nut trees, and vines. (land under trees grown for wood or timber is excluded) and (2) "permanent meadows and pasture land," which refer to land used for five years or more for herbaceous forage crops either cultivated or growing wild. Some studies which relate population to "arable land" restrict the land definition to (1) above. The choice of definition can have a large effect upon this population density measure since, worldwide, 70 percent of agricultural land falls in category (2).

[12]These provisional estimates refer to 1979 (except for China, which is for 1978) and are from the *1980 World Bank Atlas*.

[13]Opinions vary widely on all demographic measures for China. The estimates given here are based on official sources quoted in the *Guangming Daily* and *People's Daily*, the UN sources noted above, and consultation with other demographic research organizations.

April 1981

I. SCANNING THE WORLD POPULATION DATA SHEET

1. Observe from the World Population Data Sheet the crude birth rate, crude death rate and rate of natural increase of the world and at least three countries. Devise a formula to calculate the rate of natural increase based on the relationships you have observed.
2. Most people know that China and India have the largest populations in the world. What are the names, locations and populations of the least populous countries in the world?
3. Which country is growing fastest? Which countries are growing at the second fastest rate?
4. Which country adds more people annually, China or India? Calculate this by applying the rate of natural increase to the population of the country. How many people does each country add annually?
5. Which country will have the largest population in the year 2000?
6. The ten countries with the largest populations in 1981 will also have, if current rates continue, the largest populations in the year 2000. However, they will not all be in the same order. List in order of diminishing size the ten most populous countries in the year 2000. Which countries changed their rank?
7. In which country do women have the largest number of children? How many do they have? In which country do women have the least number of children? How many do they have?
8. The infant mortality rate measures the number of deaths each year to infants under one year of age per 1,000 live births. Which country has the highest infant mortality rate and what is it? Which country has the lowest rate and what is it?
9. Which country has the "youngest" population, that is, the highest proportion of population under age 15? Which countries have the "oldest" population, that is, the highest proportion of population over age 65?
10. In which country(ies) do people expect to live the longest? In which country do people have the lowest life expectancy?
11. Which is the most urban country in Africa? In Asia? In North America? In Latin America? In Europe? In Oceania?
12. Approximately one-third of all land area in the world is classified as arable—suitable for some form of agriculture. Which country has the highest number of persons per square kilometer of arable land?
13. Which country is the wealthiest in terms of per capita Gross National Product?

II. DRAWING CONCLUSIONS

A. Making a Table

1. Choose four countries whose populations have either stopped growing, are decreasing in size, or are growing at a .1% rate of natural increase.
2. Choose four countries whose populations are growing at 3.0% or more. Do not include the countries of Southwest Asia (the Middle East) because they represent special cases.
3. Make a table comparing the slow- or non-growing countries with the fast growing countries. Provide the following data for each country: infant mortality rate, total fertility rate, population under age 15, life expectancy, percent of urban population, and per capita Gross National Product.
4. Describe briefly the differences between the slow- or non-growing countries and the fast-growing countries in terms of the categories listed above.
5. Describe how Kuwait, Bahrain and other oil-rich countries in the Middle East are exceptions to the generalizations you have made. Why are they different?

B. Making a Suggestion

High infant mortality is associated with high fertility. Recent studies suggest that high infant mortality may be as much a result of high fertility as a cause of it, because of the negative health effects of many pregnancies on mothers and babies, including poor nutrition. What kinds of programs might help solve these problems at the same time?

III. CHECKING THE FACTS

Using the information in the essay, charts and tables, answer the following questions.

1. What is the population of the world?
2. What are the ten most populous countries?
3. Which is the most populous continent?
4. In 1950, what percent of the world's people lived in urban areas?
5. What percent of people live in urban areas now?

CHECKING THE FACTS, Continued

6. What percent of people will live in urban areas in the year 2000, according to United Nations estimates?
7. If urban growth rates continue, how many cities will there be in the year 2000 of over 10 million people?
8. If the world continues growing at 1.7 percent annually, when will its population double?
9. Why will more people be added in the year 2000 than currently, even though the growth rate will have decreased from 1.7 to 1.5 percent by that time (according to United Nations estimates)?
10. During what quarter of a century will the world add the largest number of people?
11. When will the world's population stop growing and how big will it be at that time (use the U.N. medium variant)?
12. According to Figure 3, which will be the first region of the world to stop growing? When will that be and how large will its population be?
13. Is the term "population explosion" accurate?
14. Why did this sudden population growth occur?
15. How does the mortality decline in the developing countries today differ from the experience in developed countries?
16. What are some of the problems associated with rapid population growth?
17. Why does it take so long to slow or stop population growth even after replacement level fertility has been achieved?
18. Which policies work best in reducing population growth?
19. Name some developing countries where fertility reduction programs have been successful.
20. What countries have populations which are no longer growing?

IV. QUESTIONS FOR THOUGHT AND DISCUSSION

1. Why is the population of the world distributed so unevenly throughout the globe?
2. Why are more and more people living in urban areas?
3. If current trends continue, there will be 25 cities of over 10 million in the year 2000 (there were 10 in 1980) and Mexico City will be 31 million. Do you think this will really happen? Why or why not?
4. How can population growth intensify problems even if it is not the root cause of them? Give two examples.
5. How can high fertility be viewed as a consequence of poverty as well as a cause or intensifier of it?
6. Why is social and economic improvement, together with family planning programs, essential for a sustained reduction in fertility rather than family planning alone?
7. Why is the status of women (in terms of level of education, employment, and self-esteem) an important determinant of fertility?
8. How are migration policies used to regulate population growth (both immigration and emigration)?
9. Why has China been successful in reducing fertility while India has had only minor success?
10. What are the population problems of countries which have stopped growing or which are growing very slowly?

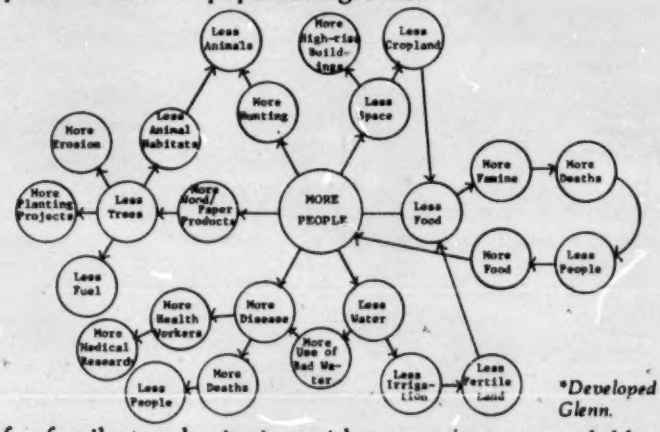
V. VALUES AND OPINIONS

1. Do you think the developing countries will bring down their fertility in the same manner as the developed countries did a century or so earlier?
2. Should countries in the developed world try to increase fertility? Explain.
3. Should the wealthier countries increase their aid to the poorer countries whose populations are growing rapidly? If yes, describe the kind of aid that should be given.
4. Should developing countries accept foreign aid if there are restrictions and conditions placed on it? For example, should they accept aid that can only be used to increase the number of girls receiving education, or aid that cannot be used for military purposes?
5. Should the slow-growing or non-growing countries have policies of unlimited immigration ("Open Door" policies)?
6. What kinds of population policies do you consider unethical? Politically unworkable?
7. How will population growth affect your future? Include benefits and drawbacks.
8. Should developed countries reduce their high consumption of natural resources? If so, how could this be done?

9. Reducing fertility means a smaller proportion of young people and a larger proportion of older people. Is this good or bad for the society? Explain.
10. Do you think the world will reach the high (14.2 billion), medium (10.5 billion) or low (8 billion) variant of ultimate global population as projected by the United Nations? Explain.

VI. ACTIVITIES

1. Make one graph of world population from the years 1 A.D. projected to 2000; make another of a specific country for the same years and compare the patterns.
2. Divide into small groups. Come to consensus on the following questions and report to the whole class:
   a) Should developed countries give foreign aid to rapidly growing, poor countries who do not want to establish population programs?
   b) Should aid be given for industrialization or for food and population programs in developing countries?
   c) What kind of population policy would you design for a developing country if you were the person or group responsible?
   d) Should developed countries have "Open Door" policies (i.e., unlimited immigration)?
   e) Should developed countries have population policies? Explain.
3. In small groups, construct a "Future Wheel"* based on the model below. Begin by placing the words "More People" in a circle—the hub of the wheel. Then draw spokes from that circle and at the end of them put the results of population growth.



Developed by Cyndy Guy and Jerry Glenn.

4. Make a diagram of a family tree beginning with two parents, two children, their children (two each), and their children (two each). How many great grandchildren do the original parents have? Now diagram a family tree with two parents who have a larger family size (choose a real country's total fertility rate or make one up; use whole numbers). How many great grandchildren do the original parents have?
5. Create a game or demonstration that illustrates how world population growth is the difference between births and deaths. Or do this for a particular country, but be sure to add immigration or emigration if these are important factors in that country.
6. Create a poster, collage, photo display, slide program or film on population growth and its impact. This can be done as a group activity.
7. Write a science fiction story or a script for a play or movie with a population theme.
8. Keep a scrapbook of newspaper and magazine articles on population growth and its effects. Summarize the findings in an essay at the end.
9. Develop a questionnaire on population topics and use it for interviewing neighbors or classmates. Present your findings to the class.
10. Devise a way to demonstrate that a large number of couples having small families can produce more babies than a smaller number of couples having larger families (to illustrate the momentum of population growth due to previous high fertility).

VII. RESEARCHING POPULATION ISSUES

Write a paper or make a presentation to the class on one of the following topics. Be sure to specify whether your focus is the United States, other developed countries or the developing countries in Africa, Asia and Latin America.

- Population growth and food supply

RESEARCHING POPULATION ISSUES, Continued

- Population growth and pollution
- Population growth and energy
- Population growth and minerals
- Population growth and wildlife
- Population growth and deforestation
- Population growth and water supplies
- Population growth and land use
- Population growth and housing
- Population growth and jobs
- Population growth and urbanization
- Population growth and health services
- Population growth and literacy
- Population growth and political stability
- Population and the quality of life (as you define it)
- Population and the well-being of children
- Population and development efforts (industrialization, agricultural improvement and education) in developing countries
- The importance of age structure (proportion of people at various ages in the population) to a country's future
- Case studies of the population history and current trends of particular countries. Be sure to point out how traditions, culture and population factors interact. Of particular interest to population studies are: The People's Republic of China, Indonesia, Hong Kong, India, Egypt, Kenya and other African countries, Mexico, Guatemala, Brazil, the United States, Canada, the USSR, the countries which have reached zero population growth (Austria, Belgium, East Germany, West Germany, Luxembourg, and the United Kingdom), Australia and New Zealand.
- Local community investigation of growth-related problems (could result from population growth or population decrease)
- Report based on a visit to an old cemetery to compare life expectancy (average age at death) of those born in the late 19th century with the life expectancy of children born today.

These are only a few of the many possible topics for population research. Use the space below to list one of your own population research topics, and include the strategies you would use to carry out that research.

FOR FURTHER READING

MATERIALS FROM THE POPULATION REFERENCE BUREAU, INC.,
1337 Connecticut Avenue, N.W.
Washington, D.C. 20036

- *World Population Data Sheet,* annual two-color wall chart with data for the world, regions and 169 countries. $1 for single copy (2-49 copies, 75¢ each; 50 copies or more, 50¢ each).
- *Population Handbook,* 64-page guide to demographic basics, also available in Spanish, French, Arabic and an International English edition. $3 for single copy (2-49 copies, $2.75 each; 50-99, $2.25 each).
- *Population Bulletins,* concise paperback reports on population topics. Of particular interest are: "Our Population Predicament: A New Look," "Population Growth and Poverty in the Developing World," "Kenya's Record Population Growth: A Dilemma of Development," "World Food Resources and Population: The Narrowing Margin," "Sweden Faces Zero Population Growth," "Resources, Environment and Population: The Nature of Future Limits." $3 for single copy (2-10 copies, $2.30 each; 11-50 copies, $1.90 each; 51 copies or more, $1.50 each).
- Publications Order Form, a list of *Population Bulletins,* teaching materials, charts, maps and other publications plus membership information. Free.
- Population-Environment Film Library Catalog, annotated listing of over 40 population films, filmstrips, slide programs and videotapes available for rental anywhere in the U.S. $5 rental fee per audiovisual aid. Catalog free with self-addressed, stamped envelope.

Note: all orders under $20 must be prepaid. Shipping/handling charge $1 on orders under $20.

OTHER MATERIALS

- "Accelerating Fertility Declines: Policy Alternatives," *Population Briefing Paper No. 12;* Population Crisis Committee, 1120 19th Street, N.W., Washington, D.C. 20036. Free in limited quantities. Write for their publications list.
- "Women and Population Growth: Choice Beyond Childbearing," "Redefining National Security," "International Migration: The Search for Work," "Twenty-two Dimensions of the Population Problem," four titles out of the many population-related *Worldwatch Papers,* published by the Worldwatch Institute. *Worldwatch Papers* are distributed by the Population Reference Bureau (address above). $2 for single copy (2-10 copies, $1.50 each; 11-50 copies, $1.25 each; 51 copies or more, $1.00 each). Orders under $20 must be prepaid.
- Population fact sheets and teaching kits *(Population Education Resources* and *Population Education Materials for Elementary Grades)* available from Zero Population Growth, Inc., 1346 Connecticut Avenue, N.W., Washington, D.C. 20036. Write for their complete publications list.
- "World Population: The Present and Future Crisis" by Phyllis Piotrow, an 80-page booklet with charts, illustrations, discussion questions and reading list. Part of the *HEADLINE Series* by the Foreign Policy Association, 205 Lexington Avenue, New York, N.Y. 10016. $2.00 for a single copy.
- *Population Reports,* 30-page booklets on population and family planning topics. Population Information Program, The Johns Hopkins University, 624 North Broadway, Baltimore, MD 21205. Some titles are available in Arabic, French, Portuguese, and Spanish; all are available in English. Single copies free; multiple copies free in developing world, 25¢ each in developed world.
- *Population: Demography and Policy* by Robert Weller and Leon Bouvier, and introductory textbook for college-level demography courses. Includes up to date population statistics and special chapter on direct and indirect government population policies. St. Martin's Press, P.O. Box 36, Lavallette, N.J. 08735. $15.95. 1981.
- *Building a Sustainable Society* by Lester Brown, a hardbound book on population, food and resources. W. W. Norton Company, 500 Fifth Avenue, New York, N.Y. 10010. $14.95. 1981.
- *The Global 2000 Report to the President: Entering the Twenty-first Century,* Volume 1 "The Summary Report," an analysis of projections of worldwide population, natural resources, and environmental trends for the year 2000. Available from the U.S. Government Printing Office, Washington, D.C. 20402. Stock number 041-011-00037-8; $3.50. 1980.
- "The State of World Population 1981," by Rafael Salas. United Nations Fund for Population Activities, Publications Office, 220 East 42nd Street, New York, N.Y. 10017. Free.
- *The Ultimate Resource* by Julian Simon, a hardbound book dismissing those concerned about the limits to growth (population and economic) as doomsdayers and alarmists. Princeton University Press, Princeton, N.J. 08540. $14.50. 1981.

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How America Studies Itself: The U.S. Census, February 1980
Population and Hawaii: A Case Study, November 1980
World Population: Toward the Next Century November 1981
All modules are $1.00 each; two or more copies of one title, $.75 each.

OTHER TEACHING MATERIALS

World Population Data Sheet
Single copies. $1.00; 2 to 49, 75¢ each; 50 or more, 50¢ each.

Population and Resources: What About Tomorrow? October 1979
A four-page reading. Single copies, $.25 each; two or more, $.15 each.

Population Education: Sources and Resources, May 1979
A comprehensive annotated listing of population education materials, organizations and audiovisual aids. Single copies, $1.00; two or more, $.75 each.

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